

# Claims

- [c1] 1. A method of determining a source of emissions, comprising the steps of:  
positioning a sensor array of emission sensors in spaced relation at fixed locations about a facility;  
monitoring changes in emission readings from the sensors; and  
performing a spatial temporal emission concentration analysis to identify a source of emissions.
- [c2] 2.The method as defined in Claim 1, including a further step of supplementing the sensor array of emission sensors at fixed locations with portable sensors.
- [c3] 3.The method as defined in Claim 1, including a further step, when monitoring outdoors, of including data relating to wind speed and direction in the spatial temporal emission concentration analysis.
- [c4] 4.The method as defined in Claim 1, the sensors being electro-chemical sensors.
- [c5] 5.The method as defined in Claim 1, including a further step of superimposing know emission concentrations upon the sensors during a monitoring cycle to enhance

sensor sensitivity.

- [c6] 6.The method as defined in Claim 1, including a further step of superimposing a gas compound that will react with the emission concentrations and the sensor will measure the reaction products as a way to amplify or isolate the signal from the gas of interest.
- [c7] 7.The method as defined in Claim 1, including a further step of superimposing a gas compound that will react with a gas that causes interference as a way to remove the interference and amplify or isolate the signal from the gas of interest.
- [c8] 8.The method as defined in Claim 1, including a further step of superimposing a gas compound that will coat the surface of the sensor with reaction products that make the sensor hyper-sensitive or hyper-specific to the gas of interest.
- [c9] 9.The method as defined in Claim 5, including a further step of varying the superimposed known emission concentrations to verify sensor calibration.
- [c10] 10.The method as defined in Claim 1, including a further step of using emission specific filters during a monitoring cycle to isolate the sensors sensitivity to emissions of interest.

- [c11] 11.The method as defined in Claim 1, wherein multiple redundant sensors are used to improve accuracy and identify sensors with erroneous readings.
- [c12] 12.The method as defined in Claim 1, wherein multiple sensors are tuned to measure different gases.
- [c13] 13.The method as defined in Claim 1, including a further step of providing a humidity module to maintain sensor operation at an ideal operational humidity level.
- [c14] 14. A method of determining a source of emissions, comprising the steps of:  
positioning a sensor array of electro-chemical emission sensors in spaced relation at fixed locations about a facility, the sensor array including redundant sensors to improve accuracy and identify sensors with erroneous readings;  
monitoring changes in emission readings from the sensors;  
using emission specific filters during a monitoring cycle to isolate the sensors sensitivity to emissions of interest;  
superimposing know emission concentrations upon the sensors during the monitoring cycle to enhance and verify sensor sensitivity; and  
performing a spatial temporal emission concentration

analysis to identify a source of emissions.

- [c15] 15. The method as defined in Claim 10, including a further step of supplementing the array of emission sensors at fixed locations with portable sensors.
- [c16] 16. The method as defined in Claim 10, including a further step, when monitoring outdoors, of including data relating to wind speed and direction in the spatial temporal emission concentration analysis.
- [c17] 17. The method as defined in Claim 10, including a further step of varying the superimposed know emission concentrations to verify sensor calibration.
- [c18] 18. The method as defined in Claim 10, including a further step of providing a humidity module to maintain sensor operation at an ideal operational humidity level.
- [c19] 19. An emission sensor combination, comprising:  
a sensor adapted to monitor a selected emission; and  
an emission module adapted to superimpose know emission concentrations upon the sensor during a monitoring cycle to enhance and verify sensor sensitivity.
- [c20] 20. The emission sensor combination as defined in Claim 15, wherein the sensor is an electro-chemical sensor.
- [c21] 21. The emission sensor combination as defined in Claim

15, wherein means are provided for varying the superimposed known emission concentrations to verify sensor calibration.

[c22] 22. The emission sensor combination as defined in Claim 15, wherein the combination further includes an emission specific filter adapted to isolate sensor sensitivity to emissions of interest.

[c23] 23. The method as defined in Claim 15, including a further step of superimposing a gas compound that will react with the emission concentrations and the sensor will measure the reaction products as a way to amplify or isolate the signal from the gas of interest.

[c24] 24. The method as defined in Claim 15, including a further step of superimposing a gas compound that will react with a gas that causes interference as a way to remove the interference and amplify or isolate the signal from the gas of interest.

[c25] 25. The method as defined in Claim 15, including a further step of superimposing a gas compound that will coat the surface of the sensor with reaction products that make the sensor hyper-sensitive or hyper-specific to the gas of interest.

[c26] 26. The emission sensor combination as defined in Claim

15, wherein the combination further includes a humidity module adapted to maintain sensor operation at an ideal operational humidity level.